

WHAT IS CLAIMED IS:

1. A hollow chamber composite article comprising:
  - (a) a section having exterior and interior surfaces and a hollow interior, said section comprising at least one part and being  
5 fabricated from a material selected from the group consisting of metal, plastic and combinations thereof;
  - (b) optionally a support element comprising at least one part and being fabricated from a material selected from the group consisting of metal, plastic and combinations thereof, said  
10 support element residing within the hollow interior of said section and abutting at least a portion of the interior surfaces of said section; and
  - (c) thermoplastic material molded onto at least a portion of the exterior surfaces of said section,
- 15 wherein at least one of,
  - (i) the parts of said section are fixedly attached together by means of plastic deformation of at least one part of said section during molding of thermoplastic material onto at least a portion of the exterior surfaces of said section, and
  - 20 (ii) said support element is fixedly attached to at least one part of said section by means of plastic deformation of at least one part of said section against at least a portion of said support element during molding of thermoplastic material onto at least a portion of the exterior surfaces of said section.
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2. The hollow chamber composite article of Claim 1 wherein said section comprises at least two parts each having an edge region, at least a portion of the edge region of each section part abutting at least a portion of the edge region of another section part and forming at least one  
30 abutting edge region,

further wherein, for each abutting edge region, at least one edge region has at least one of, at least one aperture and at least one bead, and the edge region abutting at least one of said aperture and said bead is at least one of plastically deformed through said aperture and plastically deformed into said bead during molding of thermoplastic material onto at least a portion of said abutting edge region,

thereby fixedly attaching the parts of said section together.

3. The hollow chamber composite article of Claim 1 wherein said support element includes at least one recess, and a portion of said section is plastically deformed into said recess during molding of thermoplastic material onto at least a portion of the exterior surfaces of said section, thereby fixedly attaching said support element and said section together.

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4. The hollow chamber composite article of Claim 1 wherein said section and said support element are each independently fabricated from a metal selected from the group consisting of steel, nickel, chromium, iron, copper, zinc, titanium, aluminum, magnesium and an alloys thereof.

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5. The hollow chamber composite of Claim 1 wherein said section and said support element are each independently fabricated from a thermoplastic selected from the group consisting of polycarbonate (PC), thermoplastic polyurethane (PU), polyesters, in particular polyethylene terephthalate (PET), polystyrene (PS), syndiotactic polystyrene, acrylonitrile-butadiene-styrene (ABS), polypropylene oxide (PPO), polysulfone (PSO), polyphenylenesulfide (PPS), polyimide (PI), polyether ether ketone (PEEK), polyamide (PA), polybutylene terephthalate (PBT), polypropylene (PP), polyethylene (PE), and combination thereof.

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6. The hollow chamber composite article of Claim 5 wherein the thermoplastic of at least one of said section and said support element comprises a material selected from the group consisting of filler, reinforcing material and combinations thereof.

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7. A process of preparing a hollow chamber composite comprising:

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(a) a section having exterior and interior surfaces and a hollow interior, said section comprising at least one part and being fabricated from a material selected from the group consisting of metal, plastic and combinations thereof;

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(b) optionally a support element comprising at least one part and being fabricated from a material selected from the group consisting of metal, plastic and combinations thereof, said support element residing within the hollow interior of said section and abutting at least a portion of the interior surfaces of said section; and

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(c) thermoplastic material molded onto at least a portion of the exterior surfaces of said section,

said process comprising at least one of,

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(i) molding thermoplastic material onto at least a portion of the exterior surfaces of said section, and at least one part of said section deforming plastically, thereby fixedly attaching the parts of said section together, and

(ii) molding thermoplastic material onto at least a portion of the exterior surfaces of said section, and at least a portion of said section deforming plastically against at least a portion of said support element, thereby fixedly attaching said support element to at least one part of said section.

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8. The process of Claim 7 wherein said section comprises at least two parts each having an edge region, at least a portion of the edge region of each section part abutting at least a portion of the edge region of another section part and forming at least one abutting edge region,

5 further wherein, for each abutting edge region, at least one edge region has at least one of, at least one aperture and at least one bead, and the edge region abutting at least one of said aperture and said bead at least one of deforms plastically through said aperture and deforms plastically into said bead during molding of thermoplastic material onto at  
10 least a portion of said abutting edge region,  
thereby fixedly attaching the parts of said section together.

9. The process of Claim 7 wherein said support element includes at least one recess, and a portion of said section deforms  
15 plastically into said recess during molding of thermoplastic material onto at least a portion of the exterior surfaces of said section, thereby fixedly attaching said support element and said section together.

10. The process of Claim 7 wherein at least one of fixedly  
20 attaching the parts of said section together and fixedly attaching said support element to at least one part of said section occurs concurrently in one step with molding of thermoplastic material onto at least a portion of the exterior surfaces of said section.